

WHAT IS CLAIMED IS:

1. A method of dynamically balancing work among a plurality of processing nodes, comprising:

5 periodically updating a node occupancy value at each of the plurality of processing nodes;

communicating the respective node occupancy value of each processing node to at least one work originator node;

storing the node occupancy values of the plurality of processing nodes at the at least one work originator node;

10 selecting, by the at least one work originator node, a processing node to perform a particular task in response to the node occupancy values of the processing nodes.

15 2. The method, as set forth in claim 1, wherein periodically updating node occupancy value comprises calculating the node occupancy value, by each of the plurality of processing nodes, using a percentage of available processing capacity of the processing node.

20 3. The method, as set forth in claim 1, wherein periodically updating node occupancy value comprises calculating the node occupancy value, by each of the plurality of processing nodes, using a combination of a percentage of available processing capacity of the processing node and a length of its work queue.

25 4. The method, as set forth in claim 1, wherein periodically updating node occupancy value comprises calculating the node occupancy value, by each of the plurality of processing nodes, using a combination of a percentage of available processing capacity of the processing node, a length of its work queue, and its processing speed.

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5. The method, as set forth in claim 1, wherein communicating the respective node occupancy value comprises:

inserting the respective node occupancy value into a message header of a message; and

5 sending the message to the work originator node.

6. The method, as set forth in claim 1, wherein communicating the respective node occupancy value comprises sending a message containing the respective node occupancy value as a part of existing message traffic.

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7. The method, as set forth in claim 1, wherein communicating the respective node occupancy value comprises:

inserting the respective node occupancy value and a sender ID into a message header of a message; and

15 sending the message to the work originator node.

8. The method, as set forth in claim 7, wherein storing the node occupancy values of the plurality of processing nodes comprises storing the node occupancy value in a table indexable by the sender ID.

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9. The method, as set forth in claim 1, wherein selecting a processing node comprises:

determining a subset of processing nodes having lowest node occupancy values; and

25 selecting a processing node from the subset.

10. The method, as set forth in claim 1, wherein selecting a processing node comprises:

determining a subset of processing nodes having the lowest third node occupancy values; and

30 selecting a processing node from the subset.

11. A method of dynamically balancing call processing tasks among a plurality of call processing nodes in a telecommunications switch, comprising:

periodically updating a node occupancy value at each of the plurality of call processing nodes;

5 communicating the respective node occupancy value of each call processing node to at least one work originator node operable to receive incoming calls;

storing the node occupancy values of the plurality of call processing nodes at the at least one work originator node;

10 selecting, by the at least one work originator node, a call processing node to process the incoming call in response to the node occupancy values of the call processing nodes.

12. The method, as set forth in claim 11, wherein periodically updating node occupancy value comprises calculating the node occupancy value, by each of the plurality of call processing nodes, using a percentage of available processing capacity of the call processing node.

13. The method, as set forth in claim 11, wherein periodically updating node occupancy value comprises calculating the node occupancy value, by each of the plurality of call processing nodes, using a combination of a percentage of available processing capacity of the call processing node and a length of its work queue.

14. The method, as set forth in claim 11, wherein periodically updating node occupancy value comprises calculating the node occupancy value, by each of the plurality of call processing nodes, using a combination of a percentage of available processing capacity of the call processing node, a length of its work queue, and its processing speed.

15. The method, as set forth in claim 11, wherein communicating the respective node occupancy value comprises:

inserting the respective node occupancy value into a message header of a call processing message; and

5 sending the message to the work originator node.

16. The method, as set forth in claim 11, wherein communicating the respective node occupancy value comprises sending a call processing message containing the respective node occupancy value as a part of existing call processing 10 message traffic.

17. The method, as set forth in claim 11, wherein communicating the respective node occupancy value comprises:

15 inserting the respective node occupancy value and a sender ID into a message header of a call processing message; and

sending the call processing message to the work originator node.

18. The method, as set forth in claim 17, wherein storing the node occupancy values of the plurality of call processing nodes comprises storing the node 20 occupancy value in a table indexable by the sender ID.

19. The method, as set forth in claim 11, wherein selecting a call processing node comprises:

25 determining a subset of call processing nodes having lowest node occupancy values; and

randomly selecting a call processing node from the subset.

20. The method, as set forth in claim 11, wherein selecting a call processing node comprises:

30 determining a subset of call processing nodes having the lowest third node occupancy values; and

randomly selecting a call processing node from the subset.

21. A telecommunications system, comprising:

a plurality of call processing nodes;

at least one incoming call receiving node;

the plurality of call processing nodes each:

5 periodically calculating and updating a respective node occupancy value; and

communicating the respective node occupancy value to at least one incoming call receiving node;

the at least one incoming call receiving node:

10 storing the node occupancy values of the plurality of call processing nodes; and

selecting a call processing node to process the incoming call in response to the stored node occupancy values of the call processing nodes.

15 22. The telecommunications system, as set forth in claim 21, wherein the plurality of call processing nodes calculates the respective node occupancy value using a percentage of available processing capacity of the call processing node.

20 23. The telecommunications system, as set forth in claim 21, wherein the plurality of call processing nodes calculate the respective node occupancy value using a combination of a percentage of available processing capacity of the call processing node and a length of its work queue.

25 24. The telecommunications system, as set forth in claim 21, wherein the plurality of call processing nodes insert the respective node occupancy value into a message header of a call processing message, and send the message to the incoming call receiving node.

30 25. The telecommunications system, as set forth in claim 21, wherein the plurality of call processing nodes send a call processing message containing the respective node occupancy value as a part of existing call processing message traffic.

26. The telecommunications system, as set forth in claim 21, wherein the plurality of call processing nodes insert the respective node occupancy value and a sender ID into a message header of a call processing message, send the call processing message to the incoming call receiving node.

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27. The telecommunications system, as set forth in claim 26, wherein the at least one incoming call receiving node stores the node occupancy value in a table indexable by the sender ID.

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28. The telecommunications system, as set forth in claim 21, wherein the at least one incoming call receiving node determines a subset of call processing nodes having lowest node occupancy values, and randomly selects a call processing node from the subset.

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29. The telecommunications system, as set forth in claim 21, wherein the at least one incoming call receiving node determines a subset of call processing nodes having the lowest third node occupancy values, and randomly selects a call processing node from the subset.

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